JOURNAL OF CONSULTING PSYCHOLOGY

VOL. III, NO. 1
JAN.–FEB.
1939

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AMERICAN ASSOCIATION · FOR · APPLIED · PSYCHOLOGY

VOLUME III JANUARY–FEBRUARY, 1939 NUMBER 1

JOURNAL OF CONSULTING PSYCHOLOGY

Published by the AMERICAN ASSOCIATION FOR APPLIED PSYCHOLOGY, Inc.,
48 N. Queen St. and McGovern Ave., Lancaster, Pa.

The JOURNAL OF CONSULTING PSYCHOLOGY is the official journal of the American Association for Applied Psychology which was organized in August, 1937, as an amalgamation of the Association of Consulting Psychologists, Inc., and the Clinical Section, American Psychological Association, Inc., with the affiliation of state associations of applied psychology.

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The JOURNAL OF CONSULTING PSYCHOLOGY is published bimonthly, six times a year. All members of the American Association for Applied Psychology are entitled to receive the JOURNAL upon payment of their annual dues of four dollars, two dollars of which is applied to the Journal. The subscription price to non-members is $3.00 a year. Single copies are 50 cents. Postage is prepaid.

Manuscripts, general correspondence in regard to contributions to the JOURNAL and publications intended for notice or review may be sent to the Managing Editor, Mrs. J. P. Symonds, 525 West 120th Street, New York, N. Y. Proof on manuscripts accepted for publication is not submitted to the author except upon a special request. Corrections made by the author are chargeable to him.

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PRESIDENT OF THE AMERICAN ASSOCIATION FOR APPLIED PSYCHOLOGY, 1938-1939

Volume III JANUARY—FEBRUARY, 1939 Number 1

JOURNAL OF CONSULTING PSYCHOLOGY

APPLIED AND PROFESSIONAL ATTITUDES[1]

By DOUGLAS FRYER
New York University

THE topic announced for my address was carefully chosen. I shall report my observations of applied and professional attitudes in a statement of what I have felt is the place psychologists should hold professionally in society. I realize that to do this is dangerous. The attitudes which I shall report have no scientific validity. They are only the results of general observation. Whether they are social attitudes of psychologists, correctly diagnosed, or my systematized delusions, you are the judge. As psychologists either may amuse you, in which case this address will not have been in vain.

APPLIED ATTITUDES

Applied Psychology existed before science and before written history. In those early days it was not science but psychological common sense. It had its inception in the dim dark ages along with primitive man's attempt to separate matter from spirit and control the forces of the universe. Some of it was good and some of it was bad; the legacy of the bad is still with us in the claims of pseudoscientific character readers.

I mention these beginnings of applied psychology because the scientific method was not established in applied psychology but in theoretical psychology. It was pure psychology that got us out of the ruts of mystical thinking. Its advocates charted a course of theoretical investigation which avoided the errors and criticisms of a pseudo science. This was of lasting benefit to psychology until it could accumulate facts and methods essential to its usefulness. Now, the necessity of maintaining an existence independent of practical things is past. Applied psychology is using the foundations of the science bequeathed it by pure psychology and is establishing itself as necessary in a practical world.

Applied Organization. As organizations grow they integrate more closely the patterns of their own development. Psychology was traditionally an academic science. An upheaval of tradition is necessary to recognize a redirection of scientific endeavor. This has been the history of physics and of chemistry, and

[1] Presidential Address delivered at the annual meeting of the American Association for Applied Psychology at Columbus, Ohio, September 7, 1938. Personal appreciation is expressed to Dr. E. R. Henry for a critical reading of this address. "Professional," as used in this address, refers to psychological practice as exclusive of teaching, which seems to be a necessary distinction to make today where teachers of psychology consider their teaching to be professional work in psychology.

now of psychology. Dr. Poffenberger stated in his presidential address to the American Psychological Association in 1935 that psychology was "of necessity both a pure and applied science," and he recommended means of linking psychology with life that tradition did not approve. This advice was too late for the American Psychological Association to adjust to a changing order—too late because of mental set and because applied psychologists were already experiencing the advantages of professional association.

But the American Psychological Association is considering the problems of relationships, while holding to its purpose of pure scientific endeavor. The best cooperation is evident between the A.P.A. and the newly formed American Association for Applied Psychology; a division of labor is being established. The "new order" seems to be most satisfactory to everyone concerned.

The American Association for Applied Psychology comes into existence in answer to a recognized need which has been expressed in a surprising development, beginning in 1917, just twenty-five years after the founding of the American Psychological Association, with the organization of the American Association of Clinical Psychologists. I will not sketch the history of professional organization for it is still fresh in our minds. But I should not pass this point to go on to what I want to say about the relations of the "old" and "new" order without a special word of commendation to the leadership of the Association of Consulting Psychologists. That leadership would not wish to be mentioned as individuals. It has, however, maintained for the last eight years the ideals of a national association of professional psychologists along with a willingness to step back into its natural sphere as the state association of New York when the time was ripe for national organization.

Relations between "pure" and "applied" psychology are not severed by the independent existence of the American Association for Applied Psychology. There is no reason why the American Psychological Association and the American Association for Applied Psychology could not be organized under one roof, each representing divergent interests which are necessary and good. But the applied and professional features of psychology are here to stay, if this has ever been doubted. Whatever organization there may be of psychological effort in the future, there can be no denial of the rights of the applied psychologist.

Attitudes of Applied Research. Research in psychology is fitted into a classification of knowledge sought for knowledge's sake and knowledge sought for use. This classification may serve us for a time, but it is based on only a relative distinction dependent upon attitude. If the psychologist's research purpose is utilitarian, he is an applied psychologist; if his purpose is theoretical, he is a pure psychologist. The theoretical attitude of pure science often appears to us as a bulwark of distinction determined by the group in which the psychologist finds himself congenial.

In this manner of thinking, mental tests are applied methods while including many standardized problems of experiment. "Puzzles," because no one knows whether they are, or are not, a mental problem, are materials of pure psychology. Binet was an applied psychologist because he took thought of the classification of Paris school children according to learning capacity. Kulpe was a pure psychologist because he contributed knowledge of the nature of thinking without indicating the best methods of presenting sense material for learning. We psychologists are a bit mixed in our "pure" and "applied" attitudes, while the "applied" and the "pure" go their own way, often looking skeptically at the contribution of each other.

As perhaps the only large group upholding the traditions of the purists today, animal psychologists are motivated primarily for knowledge only. But it may not be long before they too will begin a significant applied contribution in animal husbandry. Human psychologists are perhaps 50 per cent applied in attitude, although this issue is clouded for the reason that almost exclusively to date the centers of scientific work have been cloistered in university departments where to admit oneself an applied psychologist bears a stigma that may influence one's job.

Psychology, like any other science, moves from knowledge sought for its own sake to knowledge sought for some useful purpose and it does this just as fast as the assembled background allows the envisaging of a useful purpose. Some can retain because of position the distinction in attitude of pure and applied science, and this may be a reason for the prestige of separate organization, but all will recognize that one body of facts exists for both application and theoretical consideration.

The purist says that the feet of the applied psychologist often are muddy due to his utilitarian purpose, and there is a point at which this criticism can legitimately be made. Working very close to professional application and endeavoring to solve a particular practical issue, the applied psychologist may become over-enthusiastic for his results and fail to recognize the boundaries of conservative interpretations. The purist is seldom expected to produce results on schedule. Perhaps the applied psychologist should never be placed in such a situation, but he often is, and excuses himself because of this for superficial or incomplete collection of data, inadequate controls or poor analysis of results.

The less said about all this the better. We believe no reputable applied psychologist will be so pressed by the exigencies of life that he will wilfully falsify his data to secure the demanded results. Our ethics preclude any consideration for such a person, yet we know we have all erred according to our ideals. Let us not judge too harshly of our colleagues, with the knowledge that the muddy boots of the applied psychologist will expose themselves before they can do any great damage. Utilitarian purpose hangs as a sword of Damocles over the head of the applied psychologist, which is to his lasting advantage when contrasted with the theorist whose trial balloons often require a generation to float back to earth.

Systematic Attitude. Generally speaking, applied psychologists have neglected the systematic attitude in their investigations. Perhaps this neglect is not the good sign I think it is, but the natural result of fewer bald heads in the applied than in the theoretical brotherhoods. But nowhere in applied psychology is there a statement that truth lies only in one direction as so often is found in the writings of the theorist. Pure psychology seems to be returning to philosophy from which it lifted applied psychology some seventy-five years ago. To my way of thinking, it is not only unnecessary but undesirable that there be a totalitarian theory of psychological activity in order to apply the facts of psychological observation.

The theorist wants to know why and how single events are related, but his purpose is to fit his gathered knowledge into a single theory of mental activity. Often, he seeks to do this with very little factual foundation in his own work. He finds an opponent and if one is not immediately available a straw-man suffices. Endless controversy takes place; scientists get excited; the public is interested for the moment; and theories are set forth as startling as cloud bursts—and as transitory.

The history of psychology is full of such illustrations: of the structuralist's attack on associationism; of the func-

tionalist's attack on structuralism; of Gestalt psychology's magnification of a dead issue of structuralism, which it will not let us forget because it is necessary to its systematic self. Then, there is behaviorism's opponent in consciousness, and here I pause for a few moments to contrast the current attitude of the pure theorist with that of the applied psychologist.

Applied Attitude Concerning Conscious Activity. The behaviorist's attitude toward conscious activity avoids essential issues of applied psychology. The applied psychologist is necessarily concerned with the human being in his educational, occupational and social adjustment. This adjustment involves conscious activity not explored by the usual "verbal report" of the behaviorist. Conscious activity, as we know it scientifically, is the assembled facts of the verbal report, but of a verbal report differing extensively and intensively from that currently used by the behaviorist. The behaviorist's attitude has encouraged superficiality of method in study of conscious activity and, hence, neglect of fundamental existences involved in human adjustment.

It is because the behaviorist has become the systematic philosopher in psychology that this attitude is particularly regretable. One illustration will suffice, which is typical. A certain rat psychologist projects his own conscious motivation into the rat as an explanation of the rat's behavior. His courage is admirable; but his explanation is silly. The attitude that this form of psychologizing is more scientific than generalizations arrived at from controlled introspective studies of conscious stimulation is a confession that there is not time to be exact outside one's own province when it is not approved in theory.

Any rat psychologist may feel that I have maligned his scientific integrity. That my reference may be clear: His name is legion and he is not always a rat psychologist. P. T. Barnum would regard this reference as excellent publicity. But I ask the pardon of any who feel my accusation unjust.

The applied psychologist has sought facts of conscious activity wherever they obtained, regardless of systematic theory. For a long time, he has used tests and inventories to diagnose conscious performance. When these tests came to have an important place in psychology the theorist found it desirable to establish their systematic position. It was said that they do not create a stimulus-error; they are measures of what they measure. So the mental tester was received into the fold of pure psychology, while the public wondered what it was all about. Interest and attitude scales were a larger pill to swallow into current systematic theory, but they too were saved in respectability by acceptance as observable psychological phenomena, the validity of which is in question, but the reliability of which can be tested by objective statistical techniques.

Developing the interview as a means of reliable contact with the conscious life of the individual worker, the applied psychologist is told by the theorist that he is dealing with objective data, which should be designated as the "verbal report." He is informed that the verbal report is unreliable. But as an afterthought it is said that this should not matter greatly as it is only applied psychology anyway and cannot be expected to be really scientific.

If one were willing to sit in the theoretical armchair for a moment, one might see the motivation of all this in an unnecessary defense of psychology as a science and the simple belief that psychological integrations are wholly explainable in objective terms. We are told that to be scientific we must ignore consciousness, if not to deny its existence. This is acceptable theory if one adopts the right definitions. We are willing to believe that all psychological

integrations are in objective evidence and an explanation in terms of conscious activity is unnecessary to an ultimate theory of psychological activity.

But man cannot live by faith alone—or by diagrams. The applied psychologist faces the immediate realities of human adjustment. There is no recourse to a distant future explanation. Observations of conscious activity imply clear relationships between cause and effect. The evidence collected from this source is indisputable and the dogma of the theorist drifts into obscurity by its very uselessness. It is a commentary on the development of psychology as a science, when the building stone rejected by the architect is selected by the mason to form the corner stone of sound practice.

The practitioner fully recognizes this, while perhaps not admitting it because of the anathema of the theorist. What would the consulting psychologist do without recourse to the patient's awareness in piercing the veil of maladjustment? He follows the lead of the psychiatrist who regards the most malignant psychosis as psychogenic. He admits causation in conscious integration without worrying about its theoretical implication. So does the applied psychologist in industry, or education, work through consciousness in establishing the efficiencies and satisfactions of the individual worker.

Bringing this discussion of attitude towards conscious life to a close, I think the theorist in psychology has led us astray in the practical considerations of human adjustment and I believe an independent point of view is necessary for applied research and professional practice. Anything that exists is worth observing and measuring and in so observing and measuring, while we may not be in vogue with our theoretical brothers, we will be dealing with what the world and the professional psychologist are convinced is the most significant aspect of our psychological existence.

Attitude toward Method. The direct method of investigation of conscious life has been neglected by pure and applied psychologists alike for quicker approaches to this essential knowledge. But it is now agreed, I think, that we have almost exhausted the possibilities of tests and inventories as a means of access to conscious activity. We applied psychologists have a duty to perfect the means of knowing the dynamic facts of conscious life.

The confusion and equivocalness of results in so-called objective experiments is evident most clearly in the field of human incentives where specific incentives for one person are not incentives at all for another. Recently I have reviewed possibly a couple of hundred such research investigations, seeking evidence of the existence of some one unitary environmental situation, verifiable under any ordinary condition, that has more than a fifty-fifty chance of influencing the behavior of the individual in one direction or another. There just is not any. Always, statistical chances depend on the established sets of the organism, which are sometimes referred to in objective terms as influences of age, sex, intelligence, personality and so on, but which are capable of individual introspective definition. The conclusion is forceably presented that we can know nothing actually of the operations of incentives unless we have access to conscious motivation where their social implications are integrated. The key to the situation is conscious stimulation in the development of intention and mental set. These sets are "known" to the individual and they can be studied by introspective techniques as can intention.

Early in the history of their science, physiologists recognized the report of sensitivity as necessary to the understanding of receptor activity and the psycho-physicist has developed methods by which sensory quality and limen are without doubt. But the theoretical psy-

chologist has forgotten that the method always involves controlled introspection. Interest in statistical analysis has clouded the mental actuality until we believe we are dealing with a well oiled slot machine. All that is necessary is to push the lever and compute the chances of successful reaction. Neither the traditional experimentalist concerned with sensory activity nor the mental tester who works with standardized problems, is particularly concerned with the dogma of the present-day theorist, but he has forgotten that his data are dependent upon the normal functioning of conscious integration and he has neglected those controls which are necessary to the study of psychological activity involving consciousness.

I will discuss for a moment the validity of the undirected report of conscious stimulation, as it illustrates what I am talking about. I believe this kind of reporting has real practical value in gaining knowledge of conscious activity in the technical occupations, as a parallel measure for time and motion records or other measures of performance, if its validity can be established. I am giving this method a trial and recently I attempted to establish its validity, which is unsatisfactory to me, while it is as high as that of many widely used inventories.

A full description of conscious stimulation was taken for a brief period of performance, rated by the experimenter and treated statistically, with changes in performance as the criterion of validity. Over 150 correlations yield a general relationship of 0.30 and the highest relationship for one variable, that of focus of conscious cues, is 0.45. With the best assembling of individual ratings the correlation is about 0.35. These results are suggestive and the method is worthy of further consideration for we psychologists are skeptical of perfect correlations.

There has been a long stretch of barren years in the development of methods of study of conscious activity. The structuralist led us astray in theory and since his demise there has been no one sufficiently interested to re-establish introspective methods on a dynamic and genetic foundation. We must begin work where the psycho-physicist left off, I believe, and develop introspective methods with enthusiasm similar to that of the statistician who has given us techniques for the objective analysis of almost any kind of psychological data.

Recently I have turned my attention to yes-no reporting, where the observer reports the conscious existence of some factor in the working process and the data can be quantified for statistical treatment. This method has promise of real value, but it requires that the observer engage in a long period of training to identify the conscious factor under study. It may be that intelligent industrial workers can be trained to do this as well as laboratory psychologists. I mention this research in progress, while I am not able to report its applied significance, just to illustrate where we can begin in the invention of techniques, that we may know more of conscious activity than we know today from tests and inventories.

From the work of others in clinical psychology, I note attempts to pierce the veil of conscious stimulation in the psychopathic. A patient becomes suddenly disturbed with no evident environmental cause and awareness at the moment is clouded. All possible environmental stimuli are assembled for later rating by the patient as to which one was focal in awareness at the time of the disturbance and as an indication of causation in conscious stimulation. This is pioneer work, the significance of which has yet to be established, but it seems to me a more fruitful approach than to rely on a behavior or physiological explanation, such as the conditioned reflex.

Only experimentation with method will give us the means of securing such

useful psychological knowledge. Every advance in science has been paralleled by invention and this should be true in the investigation of conscious activity. I could tell you of my guesses and the manner in which I intend to proceed to gain reliable data of conscious stimulation. But your hunches may be better than mine. We are concerned here with attitudes, not accomplishments, so I shall stick to my subject.

PROFESSIONAL ATTITUDES

Until now I have spoken primarily of applied attitudes. Professional attitudes are another story. Here, psychology is groping its way along paths already traversed by established professions.

Every profession acknowledges its debt to science. Many members of professional associations are applied scientists, but permanent distinctions exist in attitude between the practitioner and scientist. The emerging of the practitioner in psychology introduces new attitudes which must receive sympathetic consideration in our association in which applied science and professional interests are unified. I shall indicate what I consider are the important professional attitudes that are now in the process of evolution in psychology.

Accepted Ways of Practice. A profession is founded upon accepted ways of practice. Such ways of practice are contingent upon the practical situations in society. The attitude in the older professions is that any practical situation arising in its field must be met if the profession is going to fulfill its obligation to society. While these accepted ways of practice are based on the best scientific knowledge that exists, they are established by a profession because a problem must be solved in view of a need of society. Accepted ways of practice constitute a profession and not the research supporting these ways, while research should continue checking and rechecking points at issue. The checking of such points at issue can become the purpose of much pure research, thus inhibiting the tendencies of a science to "run amuck" in philosophy.

Applied psychology is very slow in developing a professional attitude in this sense. Psychologists have been interested in applied research, but where applied research has been accomplished there has been little desire by psychologists until recently to put it to work. Among certain other professions the research work of psychologists has formed the basis for established practice. In general it can be questioned whether the psychologist's function is to contribute research for others to use or whether the psychologist has established himself as a professional practitioner.

So that I shall not leave a false impression at this point, let me say that there exists a considerable accumulation of ways of practice in applied psychology. The attitude of the psychologist is ambiguous in accepting the best ways. He is skeptical of his own strength. Frequently he prefers the research attitude to the professional attitude and offers biting criticism of his colleague who leaves the research haven of impracticality and says, "I will do the best I can with what is known in solving this problem of society." He seeks to enhance his own importance merely by saying, "Research hasn't told us the final answer to this problem," which may be one of essential efficiency or happiness of a large number of individuals. Assuming an attitude characteristic of leaders in other professions he would keep silent concerning the ways of practice and attack the critical issue with research.

Of necessity the best ways to meet practical problems must be known. Recognition of this on the part of industrial, educational, clinical and consulting psychologists is essential. Then, research can be applied with a purpose to critical questions where the needs of soci-

ety are evidently demanding. Enlightened individuals can agree on a common sense foundation as to what is best practice, based on observation in the clinic and factory. The American Association for Applied Psychology is taking leadership in group guidance of the individual in the establishing of the best ways of professional practice.

Professional Practice. I return to my statement that in applied psychology there are sufficient ways of practice to constitute a profession. Some will disagree with this. They maintain that psychology is not a profession and cannot be one until it has accumulated sufficient ways of practice for the solution of most of the varied psychological situations of society.

Turning to the two leading professions solving bodily and physical adjustments, as represented by the medical man and the engineer, we find that they are only now approaching maturity in this sense. It is not discouraging for a profession concerned with mental adjustment to be where these professions were fifty to a hundred years ago. Specifically, compare the building of bridges by the engineer before the Brooklyn Bridge with intelligence measurement by the psychologist today; or compare psychological practice in guidance of the learning process of childhood and adolescence with that of medical practice in dealing with germ diseases about the middle of the last century. Surely we are more enlightened now of these essential tasks of ours than were these other professions of two essential tasks of theirs at the time mentioned. This is not an extravagant claim. Yet these professions have been accepted as professions for hundreds of years before!

Make no mistake. I am not comparing the value to human welfare of these professions' contributions with ours. But I am saying that we are well on the road in the development of much needed ways of practice for the solution of problems of mental adjustment in society. We are a profession in the accepted professional sense.

Attitude of Personal Worth. Every professional worker has a certain social value and develops an attitude of what is legitimate personal gain. It behooves the individual in doing this to make a correct evaluation of his social worth within the ethical standards of his group. Many "eat their heart out" because of incorrect judgment here and get less because of it. Many grasp more than the ethical standards of their group justifies and throw the structure of professional organization out of balance. But every individual has social value which he can and should claim.

It is difficult for the applied scientist to accept this professional attitude. Yet he must if he is to live on happy terms with the professional practitioner. I think the practitioner in psychology as a rule has been too humble in balancing his value against social need.

Many applied psychologists are now in transition in becoming independent practitioners. Here they enter social competition for fees where the road they travel is far more difficult than for the salaried worker in institutions. New attitudes are in the making in this field of effort of which we can only guess from the history of other professions. Mistakes will be made by the individual and the group must be tolerant of them, for how can individual practice develop its rules without a trial of them?

Our association desires to encourage the independent practitioner working for fees. It wishes to give him social approval. But it asks him to act conservatively in departing from established professional traditions in psychology and to accept the guidance of the American Association. Applied psychologists, generally, may be slow in adopting the attitudes of the independent practitioner, but they will be generous in judging them. We believe the pre-

servative attitude will be justified in permanent professional development.

Attitude of Service to Society. One should not regard the attitude of service to society as belonging to religious effort, while religion since Christ has made it an important part of its moral philosophy. The professions and business serve society, however they may be organized. Always, they have established standards of ethics, good or bad, to enlighten and direct the worker in balancing his conduct between individual and group interests.

The ideas of social service have grown gradually in the world along with the growth of the Church, the State, and along with the professions and business. Our conception of good government is one of social service. Less obvious to us is the evolution of standards of business. We know that the ideas of social service in business had their roots before the Greeks, before the Babylonian code of Hammurapi, before the rules of business practice prevailing in the Sumerian city-states three thousand years before the Christian era. We psychologists are only a part of a cultural whole where specific ethical standards emerge for religious workers, government workers, business men, and the different professions.

Closest to us in their development of ethical attitudes of service I should put the educator, the engineer and the medical man, and we stand somewhere betwixt and between them. We require understanding of the practical issues of human adjustment to a modern engineering environment. Questions of whether it is honest to place tools in the hands of an unscrupulous advertiser in order that he may disseminate false reports regarding sources of supply or use, are essentially ours, as well as classifying a child as a moron who has not been subjected to adequate environmental stimulation.

The distinction between the false and the true art of acquisition, made by Aristotle in writing about the Greek Trader, is still good. One makes money an end in itself, while the other has as his goal the promotion of well-being by the production of wealth. Our professional tools can be used for either purpose. We change our practice with the formula of efficiency and the problems of a changing educational and business world. But the fundamental principle of honesty remains.

Attitude of Professional Adjustment. The applied psychologist is likely to carry the pedantic tradition of the university professor with him into the school and the factory. This is a criticism offered of his professional adjustment in a practical world of human relations where the economic laws apply to his work as they do to all other.

All professions must be useful to have permanent existence. Each profession must adjust to social change and varying demand for its services, yet maintain professional standards. The individual practitioner cannot escape this necessity.

The Ph.D. in psychology may think he can step into industry and dispense theoretical wisdom gained through three eventful years of study. But he learns that he must know of cost accounting, of time and motion study, of industrial engineering and management, of many other related fields of work before he is recognized as a useful professional psychologist. The child psychologist cannot walk from his child study laboratory into the home and avoid the factors involved in the home situation. He must know more of bottles, diapers and vomit in order to apply the theories gained in study of what still must be considered the artificial developmental situations of the laboratory. The educational psychologist, with the task of vocational counsel, finds that his "stock-in-trade" is not psychological tests as he was led to believe in graduate school, but a practi-

cal knowledge of the occupations. The clinical psychologist, working with psychiatrists, should necessarily be familiar with medical lingo, but he should be sufficiently oriented to distinguish where he is beyond his depth in problems outside his field.

The professional psychologist cannot be a cloistered metaphysician of mystical authority. He needs must be a human being, accepted in society, where his personality, his culture, and his specialized contribution to the welfare of society can be related in the whole social structure.

Attitude of Professional Cooperation. In closing, I have a few very personal words to say of the attitude of cooperation which it is gradually dawning upon us is necessary to further development of applied psychology. We are attempting to set our professional house in order that we may be of greater usefulness to society. This may seem a little thing to some of us now but it will be viewed as a very big thing when the whole story is told. Some of us are convinced that professional organization is the only way for us to develop social usefulness beyond the present bounds of academic absorption.

We are not the only ones concerned in this development: other professions want to see this house-cleaning; civil service and state departments want to adopt our standards; foundations will be willing to support our program once they are sure of its seriousness. Above all, we are worth more as individuals with the morale of professional association.

As individuals with individual purposes it may seem important that others accept our ideas, and we are not willing to cooperate unless they do. It has been questioned if we could pull the scattered and varied tasks of applied and professional psychologists together in an organized group. If we are going to stand as a profession we must do this—and we are doing it! Certainly we are not fit to offer help to others in their adjustment in society if we can't work together ourselves.

Each person here appreciates and can accept the attitude of cooperation if he will—which is to agree to act together as a professional body. I have observed surprising adjustments on the part of individuals during the past years in order that there might be a strong professional body which will protect the practitioner and society. Such cooperation requires compromise and submission to the authority of an informed majority, and it is based on full discussion of issues by minorities.

Professional cooperation comes before immediate individual interests. It is enlightened self-interest. No leader can rise and say you must support my ways —good or bad. There are no specialized groups that can demand privileges beyond those rightfully theirs in consideration of the whole profession. The whole must come first. Depart from this principle and grant special privileges to any individual or group, and the whole is destroyed. Then, nothing is left. Carry the torch of professional cooperation, as you have these last two years, and our work shall be recognized of lasting benefit to human welfare in a complex but progressively developing civilization.

ILLUMINATION STANDARDS FOR EFFECTIVE AND COMFORTABLE VISION

By MILES A. TINKER
University of Minnesota

During the last few years a lighting consciousness has been forced upon most of those who perform visual tasks and upon those who control the environments in which visual work is performed. This lighting consciousness has resulted from information derived from many sources. Among these are the popular articles in newspapers and magazines by authors who have interviewed "lighting experts," reports written by educators and medical men for journals in their own fields, and the better light-better sight publicity. The more fundamental information, however, has appeared as experimental reports in the scientific publications. The result is a keen interest in illumination and a sincere desire on the part of the public for sound information concerning hygienic lighting. Consequently, the consulting psychologist will frequently be called upon to furnish advice on proper illumination.

It is obvious that specifications for hygienic lighting should be based upon experimental findings that have been adequately interpreted. The purpose of this paper is to summarize in a critical manner the results of illumination experiments that are pertinent to the needs of the consulting psychologist.

Lighting should be prescribed by impartial persons who have a competent knowledge of hygienic illumination. Available recommended standards (3, 17, 19, 24) are satisfactory in some respects but unreliable in others. Suggestions concerning quality (color) and distribution of light are adequate. Recommendations for the light intensities needed for specific visual tasks, however, are based largely upon misinterpreted data and consequently are not valid. Proof of this will be cited below.

Surveys reveal inadequate illumination in a large majority of homes, offices, schools and factories. Frequently the lighting is either too dim or is arranged so that uncomfortable glare is present. Brighter illumination than is needed is also found. These conditions are no longer excusable since the data now available from the researches of psychologists, physiologists and engineers furnish an adequate basis for sound lighting practice. Healthy conditions for visual work may be had without excessive increase in cost or sacrifice of beauty by conscientious application of the basic principles of hygienic illumination. The three aspects of lighting to be considered are (1) quality or color, (2) brightness or intensity, and (3) distribution or diffusion of illumination.

Light from the common illuminants and daylight is complex, *i.e.*, composed of a series of several wave-lengths. It is well known that the focal length of a simple lens like that in the eye varies from one wave-length to another. This produces chromatic aberration. When the eye is focused upon an object, therefore, the retinal image is surrounded by a faint halo of the light rays which are out of focus. The yellow rays, which are dominant (brightest) in mixed light, are focused automatically and the aberration circles producing the halo come from the violet, green, blue and red rays which are slightly out of focus.

Light rays derived from a limited range of the spectrum are relatively uni-

form in wave-length and produce an approximately pure or monochromatic spectral color, such as spectral yellow. In view of the chromatic aberration present with complex light, we might expect that vision would become clearer as the light waves of the illuminant become more nearly monochromatic and that best vision is achieved with a pure spectral light. This is not entirely confirmed by experimental results.

For practical purposes mercury-arc light, which has been used for illumination in special situations for several years, has been considered monochromatic. Although most of its light comes from the narrow yellow and green sections of the spectrum, there is included a slight amount of blue and violet light. Contrary to earlier findings, recent determinations (18) show no significant difference in visual acuity under mercury light as compared to tungsten-filament light (ordinary bulbs). In another experiment (19), no significant differences were found in visibility of 8-point (small) type under light from a 400-watt mercury-arc and under a 100-watt tungsten-filament lamp. The same was true for speed of performing a visual test and for visibility of a test object. Similar results have been obtained by other investigators (32). When subjects are permitted to choose the intensity of light they like best for reading, they consistently select slightly brighter mercury light than tungsten-filament light (14). The differences, however, are not significant. In general, therefore, there appears to be no advantage for mercury-arc light over tungsten-filament illumination. It is also important that there is no disadvantage with the mercury light. Bell's results (5), however, seemed to reveal a greater *apparent distinctness* (19) under mercury light for objects *above* the acuity threshold. In view of these results, and since there are no known deleterious effects upon people working for long periods under mercury light, it is obvious that it is entirely legitimate to employ mercury light wherever there is any *apparent* advantage to be gained by its use. For instance, there might be a subjective impression of clearer details under the mercury light.

Yellow light from sodium-vapor lamps is for all practical purposes truly monochromatic. Luckiesh and Moss (16) have demonstrated that visual acuity is better under sodium light than under tungsten-filament light at all levels of illumination from very dim to relatively bright. Under sodium light, color-contrast entirely disappears and Luckiesh and Moss (19) conclude that sodium light has no outstanding advantage in enhancing brightness contrasts.

Visual acuity varies from one monochromatic (colored) light to another. Ferree and Rand (10) found the order yielding greatest to least acuity to be: Yellow, yellow-green, orange, green, red, blue-green and blue. White light (sunlight), composed of rays from all parts of the spectrum, was superior to the yellow when the test object was black on a white background. In practice, therefore, yellow is to be preferred to any other color or combination of colors found in ordinary illuminants for discriminating fine details. Yellow light has the further advantage of being available (sodium-vapor lamps) at the brighter levels. It can find application in practical situations where fine visual discrimination is required, such as in industrial inspection work. Results indicate that no monochromatic color is superior to sunlight. There is ample evidence, however, that these findings have no bearing upon most supraliminal tasks, such as ordinary reading, office work and most factory operations. Thus with legible print and adequate intensity of light, there appears to be no appreciable disadvantage from chromatic aberration in reading with the common artificial illuminants. In gen-

eral, one may employ whatever color he wishes for special effects and still maintain hygienic lighting, providing the factors of intensity and distribution are controlled.

Intensity of light is measured in foot-candles. One foot-candle is the brightness of light from a standard candle one foot away. Light meters are now available for quick and accurate measurement of brightness level. These instruments should be calibrated frequently, however, since they tend to become inaccurate with use and to register less than the true values. Table 1 will give some notion of the relative brightness of illumination from light bulbs of different wattages. These intensities were measured with a recently calibrated General Electric Light Meter for frosted Mazda bulbs in an ordinary bridge lamp with a parchment shade 12 inches in diameter. Thus a 40-watt bulb yields 10 foot-candles intensity at a distance of 23 inches, 15 foot-candles at 19 inches and 25 foot-candles at 14 inches. These figures should be considered only as approximations since bulbs and lamp shades vary and the brightness of light from any bulb decreases with use.

TABLE I

APPROXIMATE INTENSITIES OF LIGHT FROM DIFFERENT SIZED FROSTED BULBS

	Distances in inches between bulb and working surface to produce designated intensities		
Watt Size	10 Foot-Candles	15 Foot-Candles	25 Foot-Candles
25	16	12	9
40	23	19	14
50	27	21	17
60	31	26	20
75	49	40	31
100	52	44	34

The results of numerous investigations are in agreement concerning the relation of light intensity to visual acuity. These experiments have required visual discrimination of very fine details under various intensities of light (20). The following results are typical: There is a rapid rise in acuity from low intensity up to about 5 foot-candles. From 5 foot-candles on, the rise in acuity becomes slower and slower and almost reaches a maximum at about 20 foot-candles. In fact, the improvement in visual acuity from about 15 foot-candles to higher intensities for the normal eye is scarcely noticeable and of doubtful significance. Typical trends are illustrated by the following results: There was a 67.7 per cent increase in acuity from 0.1 to 1.0 foot-candle, a 43.6 per cent increase from 1.0 to 5.0 foot-candles, and only 8.2 per cent increase from 5.0 to 20.0 foot-candles. From 20 to 100 foot-candles the increase in acuity was slight.

The visual tasks encountered in everyday life situations infrequently require the exacting discriminations found in visual acuity tests. The relation found between visual acuity and intensity of light, therefore, is seldom applicable to the ordinary tasks. Adequate standards must be based upon results obtained under conditions that are strictly comparable to ordinary working situations. Several investigations of this sort are summarized below. At the left is given the task involving visual discrimination and at the right, the critical illumination level. The critical level is the brightness beyond which there was found no further increase in efficiency of performance.

1a. Reading 10-point type (speed), 3 foot-candles

1b. Reading 10-point type (fatigue), 3 foot-candles

2. Reading, 4 foot-candles

3. Reading 12-point (large) type, Between 1 and 10 foot-candles

4a. Reading performance in school, 4 to 6 foot-candles

4b. Educational achievement in school, 4 to 6 foot-candles

5. Computing arithmetic problems,
Less than 9.6 foot-candles
6. Sorting mail,
8 to 10 foot-candles
7. Setting 6-point type by hand,
Between 13 and 25 foot-candles
8. Time to thread a needle,
30 foot-candles

In the first experiment well-diffused illumination intensities ranging from 0.1 to 53 foot-candles were used. The reading was done by about 500 university students (26). Speed of reading increased from 0.1 to 3 foot-candles, but showed no further improvement with 10, 17 or 53 foot-candles. In the second part of this experiment, an intensive study was made of the visual fatigue induced by reading two consecutive hours under each intensity. Fatigue was measured by the degree to which clear seeing was disturbed. The results were identical with those found with the speed of reading test. Three foot-candles induced no more fatigue than the brighter lights. Although the second experiment (29) was far less pretentious, 4 foot-candles as the critical level is close to the 3 foot-candles of Experiment 1. In Study No. 3, (15), large type was read under 1, 10 and 100 foot-candles. Although there was a gain in efficiency from 1 to 10, there was no significant change in performance from 10 to 100 foot-candles. Since there were no intensities used between one and ten, we must assume that the critical level falls somewhere in that range. Reading achievement and educational achievement gains were compared under 4 to 6 and under 20 foot-candles in Experiment No. 4 (2). Re-analysis of the data (shown in detail below) revealed no differences in performance from one intensity to the other. In the fifth study (4), arithmetic problems were computed under several intensities ranging from 9.6 to 118 foot-candles. Achievement was identical at all levels of brightness. Since no intensity below 9.6 foot-candles was employed, we must assume that the critical level is somewhere below this figure. Study 6 (31) was an extensive study of the effect of illumination brightness upon efficiency of letter sorting by postoffice employees under actual working conditions. This performance reached its maximum efficiency only when at least 8 foot-candles of light were used. Increase in efficiency was rapid from 2 to 5 foot-candles and slight from 5 to 8 or 10 foot-candles. Setting 6-point type, Experiment No. 7, by hand is an exacting visual task. Performance was measured under various intensities ranging from 1.3 to 24.5 foot-candles (30). The criterion of maximum performance was achievement under daylight. With artificial light, this level was reached somewhere between 13.0 and 24.5 foot-candles. The authors suggest that this most effective level is approximately 20 foot-candles. In the final study (29), the fine discrimination involved in threading a needle was most efficient at approximately 30 foot-candles.

The above results may be summed up as follows: In reading ordinary book type (10- and 12-point) the critical level of illumination intensity, beyond which further increases in brightness produce no further improvement in performance and no further decrease in visual fatigue, is apparently 3 to 4 foot-candles. This is directly indicated in or inferred from the results of the first five experiments cited above. When the visual task is somewhat more exacting, as in sorting mail, where less than optimum legibility is present, the critical level lies between 8 and 10 foot-candles. Where very fine discrimination is required (studies 7 and 8) the critical level appears to lie between 20 and 30 foot-candles. Further experimentation will undoubtedly place this latter figure at approximately 20 foot-candles.

Beutell (6) has developed a system for determining the intensity of light desired for specific tasks when certain

important factors affecting discrimination are considered. Taking account of size of detail, contrast and emphasis upon details, the indicated intensities for efficient performance were found to be:

Clerical Work,	6 foot-candles
Type setting (very small, 6-point),	24 foot-candles
Surgical operation,	700 foot-candles
Corridors,	2 foot-candles
Tennis court,	24 foot-candles
Bill-board Ads (near),	9 foot-candles
Bill-board Ads (distant),	6.75 foot-candles
Drafting room,	12 foot-candles

The 24 foot-candles for setting 6-point type are somewhat high in view of the performance-test results cited above.

Greater brightness is needed when vision is defective or when print is illegible. Ferree and Rand (11, 12) have shown that the presbyopic eye (poor accommodation) can benefit by relatively high intensities. Other reports (8, 26) indicate the need of increased brightness for reading illegible print.

Luckiesh and Moss (15, 17, 19), who have been intimately associated with the science of seeing through their extensive research program, recommend what appears to be extremely high intensities for ordinary visual tasks. These suggestions, because of the high prestige of the investigators, have received wide attention. They recommend, for instance, 20 to 50 foot-candles for ordinary reading, 50 to 100 foot-candles for difficult reading and average sewing, and 100 or more foot-candles for tasks such as fine needlework and close inspection work. Furthermore, they consider these recommendations conservative and state that several hundred foot-candles would be best for reading large print on white paper. Their experiment consisted of recording the nervous tension in subjects' fingers while they read under 1, 10 and 100 foot-candles of light. Tinker (27) has pointed out that the experimental data from which these recommendations were derived have been misinterpreted. Re-analysis of the data reveals rapid changes in finger tension up to about 5 foot-candles of brightness, slower changes from 5 to 10 or 12 foot-candles, and only slight changes from there on. In other words, the changes that are of practical significance occur at relatively low intensities. In fact, the resulting curve is practically the same as that expressing the relation between visual acuity and illumination intensity. No one has suggested that the latter indicates the need of high intensities for reading. Luckiesh and Moss's conclusions, therefore, cannot be accepted as valid. Furthermore, the recent investigation by McFarland, Knehr and Berens (21) tends to bring in question the Luckiesh and Moss techniques. The former investigators found no relation between either basal metabolism or heart rate and level of illumination (1 and 50 foot-candles) employed for reading. They suggest that studies dealing with the effects of reading under poor illumination will have to be made directly upon the visual mechanism itself, rather than indirectly through changes in oxygen consumption, pulse rate, or muscular tonus. The numerous popular articles based upon Luckiesh and Moss's recommendations are, of course, necessarily invalid.

A new school lighting code, called American Recommended Practice (3) has been issued recently. It suggests 15 foot-candles as the minimum intensity at the desks and tables. The recommendations are apparently derived partly from the work of Luckiesh and Moss, which has been criticised above. In an explanatory article Dates (7)

reports that the new recommended practice is based in part upon Allphin's findings (2). Allphin measured school progress made by children in two schoolrooms. There were 41 fifth-grade children in each room. In one room the light intensity was 4 to 6 foot-candles, in the other 20 foot-candles were maintained as a minimum. Achievement was measured in November and again in June. Allphin claims that the pupils in the brightly lighted room gained 10 per cent more in educational age than the pupils in the 4 to 6 foot-candle room, and 28 per cent more in reading achievement. Examination of the data reveals that the *percentages were erroneously computed.* The pertinent data with percentages computed correctly are given below. Scores are in months.

Measure	20 Foot-candles	4 to 6 Foot-candles
November school achievement	118.34	118.27
June school achievement	129.83	128.27
Gain	11.49(9.7%)	10.49(8.9%)
Difference in percentage gain = 0.8 of one per cent		
November reading	121.61	121.10
June reading	132.76	130.17
Gain	11.15(9.1%)	9.07(7.5%)
Difference in percentage gain = 1.6 per cent		

The data show, therefore, only 0.8 per cent greater gain in the 20 foot-candle room for school achievement, and only 1.6 per cent greater gain for reading achievement. These are close to chance differences for the ratio of the difference to the probable error of the difference is only 0.58 for the former and 0.84 for the latter. The only conclusion indicated by the results is that achievement in the 20 foot-candle room is equal to that in the 4 to 6 foot-candle room. Allphin's mistake was that he merely computed the difference between the two gains (*i.e.*, school achievement gain in 4 to 6 foot-candle room and in 20 foot-candle room) and turned this into per cent using the smaller gain as the base from which to compute the percentage. Obviously, this result has no significant bearing on how much the pupils in the brightly illuminated room gained in comparison with the pupils in the 4 to 6 foot-candle room. An example will show the absurdity of computing percentages by Allphin's method: Suppose the pupils in the 20 foot-candle room had gained 1.0 month in reading and in the 4 to 6 foot-candle room, 0.25 month. Then, by Allphin's method, the pupils in the brightly lighted room would have a 300 per cent greater *gain.* The only acceptable method is to turn the gains from November to June into per cent and compare as indicated above.

The National Council on Schoolhouse Construction is withholding approval of the 15 foot-candle recommendation of the new school code until further experimental work has been done. The recommendation of the International Commission on Illumination is more in line with the experimental findings. It suggested (*Sight-Saving Review,* December, 1935, p. 302) that the minimum intensity in schoolrooms be set at 8 foot-candles. Examination of the data from which the new school code was derived, indicates, therefore, that the Recommended Practice of School Lighting is based upon erroneous interpretation of experimental findings. It may be that school children need 15 foot-candles or more of light, but the evidence adduced by Dates (7) in support of the recommendations is shown to be based upon misinterpretation.

The consulting psychologist will need information on hygienic factory illumination. Koepke's survey (13) indicates that industrial lighting is frequently prescribed without adequate planning. Experimental results show that it is a paying proposition to furnish adequate factory lighting. The following data

(29) show the effect of increased intensity of light on industrial production:

Factory	Initial Foot-candle Level	New Foot-candle Level	Per Cent Increase in Production
Electrical	3.8	11.4	8.5
Piston Ring	1.2	6.5	13.0
" "	1.2	9.0	17.9
" "	1.2	14.0	25.8
Roller Bearing	5.0	6.0	4.0
" "	5.0	13.0	8.0
" "	5.0	20.0	12.5

Nineteen sets of figures (29) show a 13.8 per cent increase in production when the initial mean intensity of 2.7 foot-candles was raised to 10.9 foot-candles. In another set of figures furnished by Luckiesh and Moss (19) for six industrial operations, the original mean intensity of 2.4 foot-candles was raised to 11.0 foot-candles with an average increase in production of 15.4 per cent. The accompanying increase in cost of lighting in per cent of payroll was only 2.1. Having thoroughly analyzed the available data, Troland (29) concluded, "The vast majority of industrial operations can be carried out at maximum efficiency with an illumination intensity in the neighborhood of 10 foot-candles." There are data which show that special factory operations which require fine visual discrimination, as certain inspection jobs, will be performed more efficiently with somewhat brighter light. No results indicate, however, that such intensities should be above 20 to 25 foot-candles. Some evidence suggests that factory production is about 10 per cent greater with daylight than with artificial light (29).

Adams (1) has demonstrated that in tile pressing, which is rough factory work, 3 to 4 foot-candles assure efficient working conditions. In other industrial situations, such as operation of cranes and dock and warehouse work, the intensity may be relatively low, but glare spots should be avoided and good diffusion of light maintained (22, 23).

Control of light distribution throughout the work room is of prime importance. Hygienic vision is achieved only when intensity and distribution are adequately balanced. Failure to maintain satisfactory diffusion of light produces lessened visual efficiency and eyestrain. This results from glare due to poor arrangement and type of lighting fixtures, from surface reflection and from alternation of bright areas and shadows in the visual field.

The uncomfortable effects of bright spots of light above or off to the side of the line of vision while reading, doing other visual work, or even when no visual discrimination is involved, is common experience. Elimination of this disturbing peripheral illumination is necessary if hygienic vision is to be maintained. When these side lights become brighter or are moved closer to the line of direct vision, the immediate working surface, the fatiguing effects become greater. Furthermore, the greater the number of such peripheral light sources, the more detrimental is the effect upon vision.

Uncomfortable glare and loss of visual efficiency also result from highly polished or glazed objects within the field of view. Examples are nickel plated metal parts of a typewriter and glazed printing paper. Such glare is reduced by maintaining well-diffused illumination in the work room.

Visual fatigue and lessened efficiency is produced by brightness contrast within that portion of the visual field where critical vision is required and also within the immediate surroundings. When the eyes must shift back and forth from bright to dark areas or when there is a sharp division between dark and bright portions of the working area, the eyes must constantly re-adapt to the different degrees of brightness. Eyestrain

soon results. Examples are (1) white paper on a dark desk, and (2) a dark under-surface of an opaque eye shade used in a brightly lighted room.

The following will aid in eliminating glare effects: (1) Avoid peripheral light sources, such as wall brackets and low hanging fixtures which reach down into the field of vision. (2) Avoid as far as possible the use of glazed paper, polished metallic objects and marked contrasts of brightness within the visual field. (3) Avoid strictly local lighting like that produced by most desk lamps with opaque shades. The latter produce a circle of bright light surrounded by dimly illuminated areas and shadows. (4) Maintain, in general, as equal a distribution of light as possible over the working surface.

With a consideration both for efficiency and economy, an adequate intensity of light with satisfactory diffusion is best obtained through a combination of general illumination of moderate intensity (3 to 4 foot-candles) and local lighting at the place of work. It is generally accepted that the ratio between the brightness of the local lighting and the general illumination should never be greater than 10 to 1 if fatiguing brightness contrast is to be avoided. General plus local lighting is usually achieved by use of ceiling fixtures supplemented by auxiliary units at work bench in the factory, and by desk or floor lamps in the office and home. A single lighting unit which yields both general and local illumination is the I.E.S. (Illuminating Engineering Society) certified lamp. One may use bulbs of lower wattage than specified for this type of lamp for many of the ordinary visual tasks. Table and floor lamps should be tall enough so that the light source is out of the field of vision while engaged in visual work. Thus the lower edge of a table lamp should be about 20 inches above the table. It is best to place table lamps to the side and floor lamps to the side or back of the worker. This avoids the necessity of looking at the light source when the eyes are raised.

CONCLUSIONS

Specific recommendations for light intensities that will insure hygienic vision must be founded upon experimental results. Many factors such as distribution of light, condition of the eye, and size of detail to be discriminated must be considered. Although these considerations limit the scope of recommendations, nevertheless, some specifications that apply to a variety of visual tasks can be made.

Careful consideration should be given to diffusion of light in all working situations. This includes the elimination of glare spots and shadows by the use of proper lighting fixtures adequately arranged.

The critical level for reading is between 3 and 4 foot-candles. To provide a margin of safety, somewhat higher intensities should be employed. Never read with less than 5 foot-candles of light. Where diffusion of light is quite unsatisfactory, use 5 to 10 foot-candles. When the illumination is well distributed, use 10 to 15 foot-candles. If no glare, due to faulty distribution of light or to other factors, is present higher intensities may be employed with safety, but without gain in efficiency and comfort.

In schoolrooms the minimum level of light intensity at the desks should probably not be less than about 10 foot-candles. In sight saving classrooms the brightness should probably be 20 to 25 foot-candles.

Adequate lighting in industry is a paying proposition. It appears that most operations can be done with comfort and with maximum efficiency under approximately 10 foot-candles of light. Tasks requiring fine discrimination, such as certain inspection work, need relatively bright light. Indications are

that it should be between 20 and 25 foot-candles.

With defective eyes, such as presbyopia, with poor legibility of print, and in other situations involving small brightness contrast between objects to be discriminated, brighter light is indicated. In the more severe of these situations, the intensity should probably be between 20 and 30 foot-candles. In others it can be somewhat less than 20 foot-candles.

In general we find that the critical level of illumination is slightly less than 5 foot-candles, and in most situations an adequate margin of safety is achieved by about 10 foot-candles. For exacting visual tasks or for persons with defective eyes, however, 20 to 25 foot-candles are required.

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THE FUNCTIONS OF THE PSYCHOLOGIST IN THE STATE HOSPITAL[1]

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FROM numerous directions there is evident a growing interest in the field of mental disease. Associated with this is a recognition of the need for a concerted attack on its problems by various disciplines. Psychology is showing a legitimate interest in this endeavor, as witnessed by its increasing concern with the clinical field.

More than nominal acceptance of the psychologist into the team of workers in psychopathology will depend on what contributions he can make. Thus far, with some exceptions, contributions to this field by persons who have been called "psychologists" have been predominantly at a level which cannot be considered higher than that of the technician. This has in some respects contributed less to the future advancement of psychology in its relations with psychiatry than would have no psychology at all.

It is the purpose of the present paper to discuss in broad outline the possible—and necessary—contributions of the psychologist to the study of mental disorders, particularly in relation to state hospitals, and to consider, in passing, some requisites of the psychologist for this work.

The contributions of the psychologist will be discussed with respect to three major types of activity: *diagnosis, teaching* and *research.*

The first of the functions of the psychologist to be considered is *diagnosis.* By this is meant not simple classification but the descriptive and interpretative data which the psychologist can supply, largely on the basis of objective devices, that may help in understanding the patient and his disturbance. On examination, this diagnostic contribution is found to be of three kinds: (1) The description of what the patient in his various conditions is like in certain relevant psychological functions. i.e., *what he is.* (2) The implications which the psychological studies have for therapeutic (educational, vocational, personality, etc.) policy, i.e., *what to do.* (3) The determination of the effects of whatever therapy may have been used on psychological functions, i.e., the evaluation of *what has been done.*

The psychologist, although concerned with these three types of problems, uses essentially the same devices for obtaining the answers to all of these questions.

Because of the great variety of sub-

[1] Read at the Second Annual Meeting of the American Association of Applied Psychology, in Columbus, Ohio, September 5, 1938.

jects, situations and conditions which he is called upon to meet, it is important that he be prepared to employ a great many procedures. Before applying these, however, it is most important that he establish in himself an attitude with respect to them, quite different in many ways from that which he is customarily trained to have in dealing with normal subjects.

He must be prepared to make frequent modifications in his devices, since in general they have been standardized on children or other inappropriate groups. He must be prepared to exercise ingenuity in dealing with "uncooperativeness" and to recognize the part which emotional factors may be playing in determining the results. Because important findings frequently do not come out in quantitative scores, he must be especially sensitive to the varieties and nuances of qualitative response, for it is often in these that major cues appear.

With an attitude some of the components of which were just mentioned, he is ready to face the actual problems which he is frequently called upon to meet. Some of these are: (1) determination of levels and patterns of intellectual functioning, (2) determination of the existence and nature of special defects such as amnesia, aphasia, agnosia, etc., (3) diagnosis of feeble-mindedness or various types of psychoses, (4) determination of the presence and extent of deterioration, (5) diagnosis and classification of personality characteristics, (6) determination of the effects of therapy or of medication, (7) recommendation of vocational, educational or therapeutic programs.

But it is not only with adult patients that the psychologist in the psychiatric hospital has to deal. Frequently children are admitted to the hospital or to its out-patient department. Here the problems may be even more concerned with therapeutic recommendations. Not infrequently, too, the psychologist is called upon to study the employees of the hospital, particularly the attendant group, with the purpose of more careful selection, promotion, etc.

It will be gathered from what has been said that it is essential for the psychologist to do the kind of diagnostic work which will impress upon the psychiatric staff the necessity of consulting the psychological department in a way different from that to which they are accustomed in the case of the conventional chemical laboratory. The latter is used, in most hospitals, as a purely technical service to which specimens are sent for routine tests on which figures are reported back. The use of a psychology laboratory in a similar way, namely, as a purely technical service for "doing I.Q. tests," should be discouraged and actively fought.

The acceptance of these diagnostic responsibilities will do much towards achieving for the psychologist a proper status in the hospital setting. To take care of these responsibilities adequately, however, considerable training is necessary. This training, although it may be obtained in part elsewhere, cannot be truly satisfactory without a relatively lengthy period of concentrated study in a psychiatric hospital.

Besides training members of his own profession the state hospital psychologist must take part in the training of other groups concerned with psychopathology. These two kinds of student groups require separate consideration.

The first stages of the training of a *psychologist* for the psychiatric field, in so far as the state hospital psychologist is involved, has already been presented in some detail elsewhere (1). An internship year at a state hospital was recommended. The thesis advanced was that an internship year has four major purposes: (a) to give the student facility in the use of already acquired techniques, (b) to saturate the student with experience in the practical aspects of

psychopathology, (c) to intensify the psychologist's customary experimental-objective attitude, in the clinical setting, (d) to make the student acquainted with the types of thinking and attitudes of colleagues in other disciplines, such as psychiatry and social work.

To achieve these purposes a setting is required in which the student can be given considerable opportunity not only for psychometric contact with patients and training in a wide assortment of techniques, but an opportunity for listening to and partaking in discussions of the psychiatric aspects of cases, an opportunity for carrying on research projects, and an opportunity to participate in seminars and courses on the practical and theoretical aspects of psychopathology.

To give a course of training having this general content should be accepted as a responsibility by every *psychologist* now working in a psychiatric institution. This is especially necessary since there is at present a dearth of centers available for such training. In addition, for those who are interested in becoming associated with the psychiatric hospital itself there should be an advanced year of training within the hospital. For those interested in other branches of psychiatric-psychological work, the additional year should be spent in another appropriate center.

There are *other members of the hospital staff* who should have psychological teaching. The psychologist might very well take advantage of every informal and formal pedagogic opportunity afforded him in connection with these.

To the psychiatric staff he can informally convey psychological points of view and make psychological contributions during the discussion of cases at staff conferences. Formally, the psychiatrists, particularly the psychiatric interns, should be given courses in general psychology, psychometrics, abnormal psychology and experimental psychopathology, as indicated by the particular circumstances. Wherever the material lends itself, it should be organized around actual cases and the psychiatric implications of psychological studies elaborated.

The other groups with whom the hospital psychologist is most likely to have special pedagogic contact are the social workers and occupational therapists. Whatever courses he gives to these should also be organized about clinical material, in so far as this is possible, and special attention paid to the interests of the particular group. Occasional lectures on important psychological topics and developments, and the presentation of case studies and research projects are other ways in which he can keep his contact with the staff.

Besides the diagnostic and teaching functions of the hospital psychologist, there is a third which is at least of equal importance—in some ways, of greater importance. This is *research*.

The kinds of research which the psychologist can carry on, either by himself or in collaboration with other staff members, are various. Parenthetically, it might be suggested that at least some of the psychologist's research, if possible to arrange, should, in order to develop closer relationships among the disciplines concerned, be carried on in collaboration with psychiatrists or other members of the staff. The research activities may be roughly classified into four types: (1) diagnostic, (2) psychotherapeutic, (3) theoretical, (4) administrative.

The practically unlimited opportunities for the psychologist in all of these fields need be no more than mentioned.

With respect to *diagnosis* the necessity for new discriminative procedures and for the further appreciation of already existing analytic psychological procedures in relation to all the problems mentioned under the discussion of diagnosis is great.

In the *therapeutic* field there are also possibilities for the adequately prepared psychologist. There are many problems of therapy which for solution require an experimental-clinical approach, problems whose answers can be obtained more readily in such a way than by means of the more time-consuming, conventional clinical one. The psychologist is in a peculiar position to carry on such studies. Whether by selection, by training or by both he is frequently more fitted than the medically-trained person for *psychotherapeutic* work. Such aptitude, when present, together with his experimental attitude places him in a peculiarly strong position for doing fundamental research in therapy.

In the way of *theoretical* research—research on the basic problems of psychopathology—psychologists can make a considerable contribution. As opposed to the study of the particular symptoms of a particular patient, a field more legitimately that of the clinician, they have a more fundamental interest than other groups in general principles.

In both the therapeutic and theoretical fields there is an important section which has thus far barely been touched—a section which offers opportunities to both the social psychologist and the sociologist. Reference is to the need of studying the state hospital as an institution to whose employees, patients, and procedures the patient has to make adjustments.

It is in this region that there is considerable overlapping with the field of research termed *administrative*. The hospital, especially the psychiatric hospital, has been entirely neglected by industrial psychologists. Personnel is by far the most important factor in the treatment of mental disease and if psychiatric hospitals are to make the advances they should, more attention will have to be given to the problems of personnel and personnel relations. The state hospital is not only a fertile field for all kinds of administrative research, but it offers sufficiently different problems from industry so that it ought to have a special attraction for those interested in this aspect of applied psychology.

This short survey of the functions of a state hospital psychologist has touched upon the three major fields in which he must work, namely, diagnosis, teaching and research. The program laid out may seem quite formidable for institutions with limited personnel and facilities. In practice, however, it is possible for each adequately prepared state hospital psychologist to make some contribution to most of these fields. It would appear that such a contribution is essential if psychology is to establish its place in the study of mental disorders.

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THE PSYCHOLOGIST IN A SCHOOL OF MUSIC[1]

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THERE are four major areas of functioning for the psychologist in a modern school of music:

1. As personnel officer
2. As educational adviser to the faculty
3. As teacher and teacher-trainer
4. As research investigator

Doubtless several of these functions are being performed today in schools of music by persons with various amounts and appropriateness of training. However, few psychologists hold posts of service in such schools. In some universities the departments of psychology and personnel services afford aid in the solution of problems implied by these four areas of function. It appears that music schools have not sought the aid of competently trained psychological consultants, nor, apparently, have psychologists made their offerings attractive to the schools of music.

One reason for this lack of service to the schools of music is that their highly individualistic, art-minded staffs and administrators are hard to reach with new scientific notions. Psychologists, moreover, have seldom bothered themselves with trying to show how they can serve the students and the staffs in other than regular colleges. A few prophetic voices and a small number of outstanding experimental projects have been proclaiming the opportunities. The use of tests of musical talent and the improvement of techniques of pedagogy requires organized, endowed educational institutions and music schools which are in a position to reject students. As a fourth reason for the lack of professional relation of psychologists to music schools is a legitimate distrust of the services which are proffered. Not scientifically trained, musicians should not be expected to discern good factual psychology from popular hokum, especially that which is rampant concerning emotional behavior.

It is the thesis of this paper that today psychologists are sufficiently prepared in techniques and training to take over the four functions listed above. They have sufficient precise techniques developed in the field of psychology of music itself and enough techniques which they can borrow from related personnel, pedagogical, and experimental fields, which will enable them to render much better service than is now being given by old-line guidance officers, teachers of music education, and estheticians. The future of all branches of psychology of music rests upon the success with which psychologists who are trained in the rigorous techniques of experimental psychology, including personnel and educational fields, are placed in positions of responsibility where they can work out their pending problems from the inside. Our viewpoint is that the wisest move on the part of progressive schools of music would be to set up departments of psychology and let the inceptive science and psychology of music mature within the schools of music themselves. Of course, we do not mean that all research involving musical phenomena must be thereby localized. It just seems singularly peculiar that, with few exceptions, the most creative and stimulating psychology of music is growing outside the halls of music.

Fortunately a few schools have ac-

[1] Paper read at the annual meeting of the American Association for Applied Psychology, held at Columbus, Ohio, September 5–8, 1938.

cepted this point of view and have trained men on their staffs. The writer knows of scarcely a school or department of music in any university which effectively utilizes the facilities and staff of the department of psychology. One could expect that the teachers colleges, building on their interest in educational psychology, would be the first to lay stress upon the contributions of the science to music. But in the teachers college prospective teachers are trained in the techniques of mass musical education. Group techniques are stressed. These educational psychologists are grappling with the matter which confronts them, namely, the teaching of music to boys and girls in public schools. However, a large percentage of real, serious music study is that which is beyond or outside the secondary school and which is centered around a faculty of special teachers who teach individual pupils. At the upper levels where the students begin to approach musical competency, this private type of teaching will have to remain. Therefore we shall turn our attention to how each of the four problems listed earlier appears at the college-level, conservatory type of music school.

THE PSYCHOLOGIST AS A PERSONNEL OFFICER

Naturally many of the personnel problems of a conservatory are similar, if not identical, to those of a college of liberal arts. The personnel officer begins his work with the student at the time of application for admission and continues until the student is graduated, dropped or has left for other reasons. Between these poles of time, admission and leaving, the music student is confronted by problems with which every counselor is familiar. Nothing need be said further on this point than to assert, dogmatically, that in a progressive school of music a trained psychological consultant who is skilled in counseling on everything from aptitude for studying music to love affairs is indispensable. Perhaps he is even more necessary in a school of music. Ambitions of young musicians and their accompanying emotional tensions are quite complicated. Musicians need not be queer, nor antisocial, nor personally maladjusted, but there is an obvious stress and strain on persons in this highly competitive and individualistic art-field.

Let us turn for more careful consideration to the one special problem of a personnel nature which is so controversial at present, the problem of measuring and describing musical talent. About the various standard tests much has been written, critically and uncritically. Within the past year, a rather warm argument has found its way into the issues of the *Music Educators Journal*. Apparently all is not well on the testing front. Professor Mursell (3) started the argument in earnest in the October, 1937, journal mentioned. The essence of his argument in this paper and in the final argument (4) in the May, 1938, issue is that the Seashore tests have not squared up with what they are expected to do; there is no real evidence that scores on the Seashore measures predict musical accomplishment.

Professor Seashore's (5) rejoinder is that he does not believe in Mursell's idea of an "omnibus" measure of musical talent and that from the beginning he has consistently asserted that each test is of an isolable specific function and that all six of the measures together do not constitute all there is to musical talent. Having taken this stand, Seashore, unfortunately, fails to do two things he might have done. First, he might have placed upon men like Mursell and others, who have access to large laboratories and fine supplies of musical guinea pigs, the responsibility for building better and more practical tests of the omnibus variety. In fact, he might have relisted his original inven-

tory of musical talent, which has a pre-war history, and told his critics to spend their time more effectively tackling many of the as yet unmeasured items which most of us agree must sooner or later be treated by practical tests. Secondly, he could have made an adequate defense of his battery even on an "omnibus" hypothesis. Admitting imperfections, he could have pointed with pride at the work of the Eastman experiment where essentially the measures were lumped into one score and treated in "omnibus" fashion. However, Larson (2) of the Eastman School came to the rescue on that score. Likewise, Kwalwasser (1) of Syracuse defended the whole testing approach, including the Kwalwasser-Dykema test. Mr. Miller, director of music in Rochester public schools, added some comments from the practical administrator's slant. A sound conclusion from all of these papers is impossible. Inadequate data are presented. In a couple of papers personalities clashed rather than ideas.

These rather fruitless arguments have neglected the fact that the data for accurate and objective validation of the tests are available. In the first place, inadequate recognition is given Dr. Stanton's ten-year study at Rochester. Secondly, in the Rochester public schools, according to the writers therefrom, many thousands of youngsters have been tested and data on their progress through secondary school must be available. Presumably valuable follow-up studies beyond secondary school would not be impossible. But, as Larson states, the press of routine duties forbids elaborate statistical analyses and research reports.

The speaker would like to urge, as a tentative position to guide persons wishing to function as psychological consultants in the field of musical aptitudes, that scores on the Seashore measures or Kwalwasser-Dykema tests, or both, should be treated as we treat intelligence test scores in a college admission office, as we treat ratings on the Strong Vocational Interest blank, or any other personality instrument. Let us use tests clinically and interpret them in the light of intelligence, academic success, auditions, ratings in other traits, and other bits of case history information we can obtain. Only by working from within the practical, personnel office of a school of music can we hope to carefully validate any of the current objective devices and eventually arrive at a good conception of the total hierarchy of qualities which lead to success in music. One is also convinced that only a research-minded personnel officer will do.

THE PSYCHOLOGIST AS EDUCATIONAL ADVISER TO THE FACULTY

The teaching of music is undergoing a radical change. This change is most complete now on the elementary and secondary level. Once music was a luxury, a sort of necessary luxury, and most parents tried to show an interest in art and some social superiority by sending their children to the lady down the street who gave lessons or perhaps to the bearded gentleman who prided himself over a "down-town studio." "Taking lessons" was automatically a part of childhood and at least early adolescence for most boys and girls. After a few years of impoverishing teaching and drilling with the alarm clock on the piano to mark the passage of a half-hour, the boy or girl who didn't profit quit taking lessons. It was a costly device for discovering talent and a costly device for promoting good music vocationally and avocationally. Its toll in dislike for music must be tremendous. We have cited the vices; naturally there were some fine virtues of the system also.

Today the story is different. The public schools are committed to the principle of providing musical experiences

with respect to appreciation and performance for all children. The teaching is adjusted to the needs, abilities and interests of the group. Today, in some schools, membership in musical organizations is equally approved by young adolescents along with performance on the basketball team. Without defining whether the hen or egg came first, we can say that the present situation is one in which music is taught in a radically different manner and by the public schools. A teacher with sixty in his orchestra and forty in his glee club simply cannot give private lessons. Modern techniques for teaching younger children and older beginners are based upon group experiences and group practice supplemented by private lessons. Current philosophy is that when a youngster has outgrown the group technique the time has come for him to be turned over to the private teacher. The result of this changed program is that public school music teachers are different and, if we judge by their product, better teachers.

The same sort of change, though not so radical, is happening in the college-level school of music. Economy will force part of it. Music teachers are still highly individualistic, but one cannot help but believe that much of the real essence of music need not be taught too individualistically. At least there ought to be some way whereby the methods which are used in giving private lessons could be brought into the light for some really searching studies of their efficacy. Doubtless some such studies are being done all of the time. The psychologist in a school of music ought to have as his function the inspection and modification of teaching techniques. A changed mode of teaching cannot be achieved by dictation. Rather, the consulting psychologist should conceive his role as the analysis of the teaching problems of which the teachers themselves become aware. Then, with the aid of the best scientific educational principles, he should attempt to help the teachers reorganize their ways of instruction. He will need to conduct careful experiments. He will have to be aware that he will be on a frontier most of the time. The educational psychology of music is an inceptive science.

THE PSYCHOLOGIST AS A TEACHER AND TEACHER-TRAINER

In addition to the personnel services to students and the pedagogical relations to the staff, the psychologist in a school of music might also teach courses in psychology. This is especially true where there is no liberal arts college affiliated with the same institution. One could build a most excellent course in general psychology which would emphasize in its materials the musical aspects of life. For example, in discussing emotion, there would be no end to the fine experimental and discussional materials available. If a separate course in esthetics is not given, this topic also might become part of the course in general psychology.

The psychlogist also might have a hand in the teacher-training courses in music education. Even if they are to be taught by musicians, the psychologist will do well to keep close to these courses in an advisory way.

THE PSYCHOLOGIST AS A DIRECTOR OF RESEARCH IN A SCHOOL OF MUSIC

We shall assume that the modern school of music is interested in creating new knowledge about music as well as producing performers and composers. Categorically we can state that just as academic departments seem to grow best when the staff and some advanced students are vitally interested in new knowledge, so a school of music ought to grow better and be more effective in its regular work when its staff and advanced students are interested in research investigations. Such research studies would range all the way from historical musi-

cology on an objective basis to the physiology of the vocal organs. A large number of the problems worthy of study come within the province of the psychlogist, or at least of the psychologist in cooperation with other technical specialists. It is perhaps too much to expect that many schools of music will have departments of research. All of them ought to be studying experimentally in the field of basic musical pedagogy. Some schools will function through departments in other colleges of their universities. For technical reasons some studies might well be taken entirely out of the school of music. However, many studies can be done with little expense and equipment. Others that require more elaborate equipment are "naturals" for a school of music and if they are not done there, they probably will not be done at all.

To sketch the range of such studies, one can list some of the areas of pertinent research now confronting us which can be approached by trained psychologists cooperating with other scientists and with musicians within the laboratories of the schools of music. The advantage of a group of musical "guinea pigs" is obvious. The list of studies might include:

1. Adequate validation of current tests of musical talent.
2. Construction of further tests of musical talent, especially to cover other aspects of talent not now measured.
3. Determination of the over-all and broad profile of capacities, interests, attitudes, and personality traits which prognosticate musical success.
4. Differential patterns of abilities, etc., required for different types of musical careers.
5. Experimental validation of techniques of teaching music.
6. Construction of achievement tests in music, both of performance and of musical knowledge.
7. Construction of musical curricula which will lead to most sure progress, growth of appreciation, and skill.
8. Psychophysical studies of the hearing of music.
9. Critical research in voice production, both physiological problems and technical problems of teaching voice production.
10. Research in musical complexes like rhythm, tone quality, phrasing.
11. Research in the field of motor skills of musicians.
12. The developmental psychology of musical abilities.
13. The psychology of primitive and untutored music.
14. The psychology of musical feeling and emotion.
15. Intuition, imagery, and inventiveness of the composer and performer.
16. The social psychology of musical audiences.
17. The psychology of public relations, for example, the making of an operatic star.
18. Solution of vague notions about temperament and "artiness" of musicians.
19. Mental hygiene of musicians.
20. The experimental study of esthetics.
21. The role of music in institutions of reform and health, in industry, and in recreation.

These are but hints of the variety of problems which are amenable to scientific study and which ought to be the special province of schools of music themselves through their departments of research. No implication is made that they cannot be studied elsewhere; stress is being placed upon a natural relationship which ought to be capitalized.

The writer must dilate a moment further on the problem of experimental esthetics. Esthetics is not yet a normative science as it should be, but is a form of artistic metaphysics. It is still medieval. It is almost impossible to talk with a philosopher, poet, painter, or musician

about his works and have judgments and appraisals which are intelligible to objectively minded persons. Esthetics is esoteric. If you do not like the art product, it is because you are not inside of it. You are of a different world. If the reader doubts this, let him spend one day in a public library reading about rhythm as it is discussed by musical writers and philosophers and some non-experimental psychologists. Let him try to find ten pages of coherent, inter-communicable esthetics of rhythm.

It was the writer's privilege to study for five years on a project which involved the objective analysis of artistic singing. Whatever the values may be of the reports, the study did point out that by perseverance and objective measurements, we can make order out of chaos and that when order cannot be achieved immediately one seeks further data rather than call music an intangible art. It would seem most fortunate if soon a group of music schools would cooperatively set out to define what is beautiful in music through utilizing the sciences which stand ready to help. Early in such a program a congress on terminology would need to be held.

This closes our survey of the four major functions which we conceive to be those of the well-trained psychologist in a progressive school of music to-day. Sketchy as the comments are, they indicate the wideness of the opportunity for worthy service.

QUALIFICATIONS OF A PSYCHOLOGIST IN A SCHOOL OF MUSIC

From the scope of the opportunities which have been described, it appears that no one psychologist can hope to do all of these tasks in a given school. We must look for specialists even in this already narrowed field. Schools may have to select certain functions for emphasis.

In order to serve the personnel functions of the school, the psychologist should be able to fulfil the standards set up by other schools which employ personnel officers, and by certain standardizing agencies like the American Association of Applied Psychologists. These standards are being codified rapidly. Of course, the music school psychologist must have special training in measuring musical talent. If his major function is to be the improvement of the quality of teaching, we should look for a competent educational psychologist with a flair for things musical. As we all know, much of the training of the educational psychologist and the personnel director is overlapping.

With respect to research training, one would not expect any one man to be skilled in all of the types of research listed. If his basic interests are in personnel, let him specialize in that sort of research. If they fall in the field of motor learning or in the large area of musical perception, let him work in these fields of "pure" psychology. If he is himself particularly sensitive and has an understanding of the basic ways of measuring musical performances themselves, let him contribute to objective esthetics.

There is no reason to believe that a psychologist in a school of music needs himself to be a trained musician. Such training would be desirable and several men every year are entering psychology from music. More important, this is a psychological, a scientific, job and musically all that needs to be demanded is a profound interest and a working knowledge of musical concepts.

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THE CONSTANCY OF THE I.Q. AT DIFFERENT AGE LEVELS

By HORACE B. ENGLISH and CARL D. KILLIAN

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RECENT studies, emanating from Iowa and Toronto particularly, have renewed interest in the constancy of the I.Q. These studies have primary reference to the theoretical question of nature versus nurture, but they are also of significance to the clinician and educator who seeks to predict the future development of a child. It is a fair summary of the Iowa Child Welfare Station studies to say that we no longer can be confident that the I.Q. will remain approximately constant *when the environment is radically improved.* Just what constitutes radical improvement is not clear; apparently as so far proved, it means attendance in the excellent schools of the Child Welfare Station. Neither is it clear that the gain is permanent. Maturation has yet to have a final word in the cases reported.

But in dealing with an individual child we cannot, alas, count on radical improvement in environment. Even if we knew what they would be for that child, we are generally powerless to secure for him more than a fraction of the optimal conditions. It is not irrelevant, therefore, to ask: What is the expectation of variability in intelligence under ordinary run-of-mine conditions?

There have been, of course, many studies addressed to this question; there is no need of reviewing them. But there is no *a priori* reason to be confident that the variability will be the same at different age levels. The average variability which is consistently found to be around five points in I.Q. might be compounded of quite different variabilities at the several ages. We think it worth while, therefore, to report a short study made by us some years ago.

The study was limited to records of children with at least three Stanford-Binet tests at intervals of a year or more, lying between I.Q. 70 and 130. Surprisingly few such cases are reported with full details in the literature. Other cases were kindly supplied as follows: by L. M. Terman, 105; by Bertha M. Luckey, 72; by E. A. Lincoln, 23; by C. H. Calhoon, 7. In all we have 284 cases with 982 separate examinations distributed as follows: 206 with three tests, 40 with four, 20 with five, 17 with six, 1 with seven. The distribution of mean I.Q.'s is shown in Table I.

It is clear that the group is somewhat above average but not in distorting degree for the purposes of this report.

For each child we computed the mean of his three or more I.Q. determinations and the deviation of each therefrom. This deviation was entered under the respective life ages. The result is set forth in Table II. Table III is similarly constructed with the entries based on the attained mental ages.

TABLE I

Distribution of Mean I.Q.'s Among Two Hundred Eighty-Four Retested Cases

I.Q.	No.
70–79	28
80–89	44
90–99	46
100–109	52
110–119	62
120–129	52

TABLE II

VARIABILITY IN STANFORD-BINET I.Q. AT DIFFERENT LIFE AGES

	Life Ages												
	4	5	6	7	8	9	10	11	12	13	14	15	16
Number of Testings	8	48	125	119	122	136	135	110	75	55	32	10	7
A. D.	3.1	5.4	4.8	4.6	3.9	4.7	4.6	5.3	4.3	5.6	3.6	4.5	5.8

TABLE III

VARIABILITY IN STANFORD-BINET I.Q. AT DIFFERENT MENTAL AGES

	Mental Ages														
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Number of Testings	22	57	87	129	109	131	114	96	65	41	40	26	28	21	13
Average of A. D.'s	3.2	5.2	4.8	4.8	3.9	4.6	5.0	4.4	4.5	3.6	5.4	4.9	5.5	6.4	8.0

It is clear that there are no considerable differences in variability at the various life ages nor, except in the case of mental age 18, for the various mental levels. We may expect the ordinary psychiatric clinic case to show a variation between 3.5 and 5.5 I.Q. on the old S.-B., and somewhat closer to the latter figure in most cases. No particular allowance need be made for the age factor, either life or mental age. Within the limits of the increased sampling error, we get the same results when we compare the *first* test with the average of three or more.

This confirmation of the fact that the I.Q. *seldom* varies more than 5.5 points and the extension of the finding to show that this variability is much the same at different ages must not be put to improper uses. We say nothing about that impossible ogre the "true I.Q." And we trust that our finding will not be used as evidence in the nature-nurture controversy.[1] For under "ordinary conditions" both nature and nurture vary without experimental control; whatever variation you find may then be due to either, neither or both, usually both.

We do not, therefore, differ in substance from Dr. Bingham's editorial in this JOURNAL[2] in which he denounces the shibboleth of a constant I.Q. We do think he is in danger of pouring out the baby with the bath water. As he implies, no psychologist today believes that intelligence is in any usable sense a life constant. What is abundantly clear, however, is that *it is extremely difficult to modify the I.Q.* The relatively small amount of variability found under ordinary conditions—which obviously vary considerably in some cases from year to year—is one more bit of evidence to that

[1] This finding should be used still less as evidence of our position in the nature-nurture controversy. To say as a doctoral candidate in education once did, "I must reject the doctrine of a constant I.Q. because it is contrary to the view that it is the duty of education to reconstruct intelligence" is a denial of empirical science and a return to that medievalism so much extolled by a certain university president. Psychology can do more for educationists by making clear that terms like "constancy" are quantitative and relative, not matters of either-or to be decided on *a priori* grounds. We must make sure that we have learned the lesson ourselves.

[2] W. V. Bingham, "The Inconstant I.Q.," 1938, 2(3): 96.

effect. A cataclysm or a planned program of great insight seem needed to alter the developmental line, especially to alter it permanently.

Our own finding, however, we regard as of merely practical significance. A certain amount of constancy and a reciprocal amount of variability under "ordinary conditions" is a statistical fact. We have shown that age differences do not affect the fact. This fact permits us to make judicious predictions.

REPORT FOR 1938 OF THE BOARD OF EDITORS

ARTICLE III of the A. A. A. P. Constitution defines the Board of Editors as comprising four representatives from each section and one from the Board of Affiliates. These representatives are to serve for four years, with the terms so arranged that one member from each section retires each year. In accord with this constitutional requirement, the following representatives were elected for the specified terms by Sectional meetings in September, 1938: Clinical—C. M. Louttit (4), E. A. Doll (3), B. M. Luckey (2), F. L. Wells (1); Consulting—R. H. Paynter (4), D. Fryer (3), H. C. Link (2), R. A. Brotemarkle (1); Educational—P. M. Symonds (4), G. H. Hildreth (3), F. N. Freeman (2), J. E. Anderson (1); Industrial—C. L. Shartle (4), H. E. Burtt (3), M. S. Viteles (2), P. S. Achilles (1); Board of Affiliates, C. M. Louttit.

The Board of Editors held meetings on September 5th and 7th, 1938. The second meeting included newly elected members of the Board. Douglas Fryer was elected chairman of the Board for a three-year term. C. M. Louttit was elected secretary for a one-year term. The resignation of Warren G. Findley as Business Manager was accepted, and a resolution commending his very efficient handling of the Journal's business affairs was adopted. Jack W. Dunlap, treasurer-elect of the Association, was appointed Business Manager of the Journal to take effect January 1, 1939. Mrs. J. P. Symonds was re-appointed Managing Editor for 1939.

The Board of Editors voted to accept on behalf of the A. A. A. P. Dr. Lightner Witmer's offer of the *Psychological Clinic* and to incorporate it into the official Journal of the Association. Suitable indication of its incorporation is to be made in a subtitle of each issue.

The Board of Affiliates proposed a group subscription plan whereby the official Journal would be made available to members of affiliated organizations at a rate equal to the amount allotted to the Journal per member. This plan was approved by the Board of Editors, and the conditions of participation have been set for the year 1939 by Jack W. Dunlap as $2.00 per subscription in groups of five or more providing the subscriptions are entered at one time through the secretary of the affiliated association.

There has been considerable discussion of editorial policies both in the meetings and by correspondence among the members of the Board. It has not seemed wise to establish any detailed policies as yet. One of the chief functions of the Journal is to serve as a medium for official business of the Association, its sections and affiliates, and various professional committees. Reports of sections and affiliates should be sent directly to the Editor, but reports from section or other professional committees should be sent to the Executive Secretary of the Association. In this way the Executive Secretary's office can serve as a clearing house and assist in fostering co-operation and avoiding duplication of effort.

Starting with Volume III, 1939, the

size of the Journal will be increased to forty pages per issue. This expansion will make available space for increasing official material and probably for original articles. The members of the Editorial Board will welcome suggestions and criticism from every member of the Association on any matter that concerns the official Journal.

Signed,

C. M. LOUTTIT, *Secretary,*
Editorial Board, A. A. A. P.

Resources for the Consultant

By Ruth Updegraff
University of Iowa

RECENT APPROACHES TO THE STUDY OF THE PRESCHOOL CHILD. III. INFLUENCE OF PARENTAL ATTITUDES UPON CHILD BEHAVIOR

FEW would question that there is an important relationship between a child's home influences and the nature of his behavior. That general maladjustment may grow out of home problems has probably been more stressed, however, than the correlation of more favorable behavior with home background of a more stable and less flagrantly unadjusted sort. There is a large body of literature analyzing these connections and discussing specific considerations according to a wide variety of classifications concerning home conditions. Quite recently, however, there has been reflected in the literature a realization that the term "home background" has covered a multitude of different concepts. Too frequently, it has been found, certain of the more easily secured items of information (such as income of the father, number of members in the family, education of the parents, etc.) have been studied and whereas certain direct relationships have proved to exist, these conditions have not immediately causal significance; it is the resulting behavior within the family group and the interplay of attitudes within the family which constitute the real core of the problem, and, as such, are important for the psychologist. It is hopeful, therefore, that now are beginning to appear studies directed toward discovering more specific relationships and toward investigating whether it is possible to indicate certain behavior in the child as being due to stated conditions in the home. Some of the studies which are directly attacking this problem at its source are summarized here.

Witmer and her students (7) have published the result of summarizing the outcome of 290 cases, with few exceptions the "treatment cases" of the New York Child Guidance Clinic, which were opened and closed between the dates of July, 1927, and July, 1930. In conclusion Dr. Witmer states, "In general, then, the degree of success achieved in treatment and the child's later social adjustment appeared to be related to the degree of his, or particularly, his parents' emotional maladjustment. The other traits considered in this paper—such as the patient's inherent capacities, the physical environment in which he lived, the type of treatment given to him at the clinic—faded into insignificance as determinant of adjustment, being almost wholly overshadowed by the influence of emotional factors." . . . (The findings) "lend weight to the mental hygiene hypothesis that parent-child relationships are of fundamental importance in determining personality development, and at the same time they suggest that the methods of therapy generally employed are not very successful in remedying the more serious difficulties that arise out of family maladjustment."

In investigating behavior adjustment in young children as related to reported tension in interparental relationships,

Baruch (1) studied thirty-three children and their parents. The children, a superior group intellectually, ranged in age from eighteen to fifty-six months, with the mean age at four years, two months. They were all attending nursery school, were observed there, rated by their teachers and their adjustments determined through such records as well as through reports of home behavior. Data on the inter-parental relationships were secured in free interview from both parents of twenty-nine of the children and from the mother only in four cases. The occupations of the fathers placed them in the two highest levels of the Sims scale.

The findings of the study evidenced that the following items concerning inter-parental relationships were significantly related to child adjustment: tensions over sex, tensions over ascendance-submission, tensions over lack of consideration, lack of cooperation on the upbringing of the child, extra-marital relations, tension over health, inability to talk over differences to a mutually acceptable solution, tension over insufficient expression of affection, tension over friends, tension concerning work, tension over relatives. Considering the material in the light of the various types of analysis that were made, the tensions over sex and over ascendance-submission appeared to be those most appreciably related to child adjustment. The following items did not appear significantly related to child adjustment: tension over leisure pursuits, criticalness of the partner, tension over finances and tension over differences in taste.

Hattwick (4) has also studied children of nursery school age. Three-hundred-thirty-five nursery school children ranging from twenty-three to sixty-eight months (median forty-two months) were rated by three of their teachers; a variety of descriptive behavioral items were judged in terms of the frequency of the occurrence of the behavior. Ratings of the home were also secured from the teachers who made at least one home visit and in addition held teacher-parent conferences. Indications of the data were the evident relationships between infantile,withdrawing types of reactions as displayed by the children with over-attentiveness in the home environment. Also, there appeared a positive relation between inadequate attention in the home and aggressive types of behavior on the part of the child when at school. Hattwick and Stowell (5) in a similar study of older children report poorer work habits in "babied" children and conclude that the work of the school depends to a marked extent on parental attitudes.

A study to determine the relationship between five characteristics of parental behavior and eleven selected patterns of child behavior, by Grant (3), while in method of a somewhat preliminary nature, suggests some interesting relationships and supports co-existing variables suggested by others. The group in her investigation consisted of thirty-three nursery school children two years, one month in age to five years, six months. The group was above average in socio-economic status. Descriptions of the home environments were secured by means of a modified interview procedure. (In this connection also, this discussion should mention the guide for the estimate of parental attitudes as prepared by Fitz-Simmons [2].) On the basis of the data obtained in the interview, each home was given five ratings on a seven-point scale based on the judgment of the interviewer. Data on the behavior of the child were obtained by the ratings of three observers who were in daily contact with the children, the final rating being an average of the three. These ratings were correlated with the ratings on the home environment.

Analyses of the correlations indicated the following: overprotected children

tend to withdraw from the group and may be submissive and lack self-reliance, whereas rejected children tend to be ascendant and sadistic. Nervous habits and a feeling of insecurity tend to characterize both the extremely over-protected and extremely rejected children though the overt manifestation of the behavior may be different. Home environments characterized by a "logical-scientific approach" tend to produce such types of child behavior as the following: self-reliance, responsibility, resourcefulness and perseverance, as do also home environments encouraging "development and expression of ideas." Home environments that foster social development seem to correlate significantly with the following patterns of child behavior: ability to play with the group, cooperativeness, responsibility and ascendancy. Fundamental elements involved in fostering the child's social development may be the social adaptability and adjustability of the parents themselves. These data also seem to indicate that parental provision of opportunity for the child to make social contacts outside of the home tends to be an important factor in "fostering social development." Finally, a calm, happy home life appears to be related positively with the child's security, his cooperativeness and ability to play with the group, and tends to be related negatively with nervous habits and sadistic behavior.

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BOOK REVIEWS

PERSONALITY; A PSYCHOLOGICAL INTERPRETATION. By Gordon Willard Allport. New York: Henry Holt and Company, 1937. Pp. xiv + 588. $3.50.

We students of personality have done those things which we ought not to have done: we have concerned ourselves chiefly with general laws applying to groups of people. We have not done those things which we ought to have done: we have not sought first to represent the single life with maximum fidelity. But there is enough health in us that a shot in the arm such as this volume should revive us.

"The outstanding characteristic of man is his individuality." It appears very early, and tends to persist throughout life. Individual uniqueness is not haphazard; individuals are characterized by internal consistency. Our theoretical task is to discover general laws which underlie unique and intra-consistent personalities.

Laws cannot be established without units of observation, which, if we are not to lose sight of persons as we know them, must be on "significant levels." Such a unit is the trait, which, as a motivational system, is sufficiently flexible to account for apparent inconsistencies in individual behavior, and sufficiently persistent to account for obvious consistencies. The theoretical undergirding of the trait is laid down in the author's analysis of the two problems of motivation and of transfer.

"Motives are always dynamic formations of minds-in-particular," and their individual transformations must be known. The doctrine of physiological drive offers a suitable portrayal of the motives of young infants, but is inadequate to account for adult motivation (as is any doctrine of motives shared by all men) because motives develop a "functional autonomy" of their own. Regardless of the origin of a person's motive, as he matures "the bond is broken. The tie is historical, not functional."

Since the alleged elements involved in transfer are rarely elementary, and the alleged identities are hardly ever identical, the doctrine of identical elements must be discarded in favor of that of "equivalences." Transfer depends upon equivalence of meaning to the individual; it is attitude, set, which renders many responses and many stimuli equivalent.

A trait is thus a motivational system become autonomous. It is not created in the mind of the observer, but is an actual psychophysical disposition capable of rendering stimuli functionally equivalent, capable of initiating and guiding consistent (equivalent) forms of behavior. Traits are not directly observable, but can only be inferred—most objectively so when shown by laboratory procedures that diverse stimuli and diverse responses are equivalent for an individual. It is the focus of these equivalences, their common meaning to the person, that identifies the trait.

An early chapter contains a brief history of characterology, and the final two sections deal with methods of analyzing and understanding personality. But the main argument is to be found in the second and third sections, outlined above, for much of which the author is indebted to W. Stern's writings.

Those who deal with people in clinical situations will find themselves repeatedly nodding in assent. We do treat people as if they possessed traits, and we are constantly searching for whatever it is that lends inner harmony to personalities—even apparently centrifugal ones. If one accepts, as does Allport, the initial premise that all of an individual's behaviors are congruent, the only problem is that of the bases of congruence. An individual is, of course, *an* organism, not several of them, so that an organismic congruence is axiomatic. What the trait hypothesis seems to add to this is the notion of multiple, interdependent foci of predominant readinesses. Apart from the metaphysical assumptions involved, few will quarrel with this. And if individuals have dominant motives, there must be some psycho-physical arrangements which correspond to them. But Allport could make a better case for their existence as entities if he were in a position to show that methods of inference could lead to greater agreement among independent observers than can yet be demonstrated. It is easy to argue that *some* foci of readiness must exist. But lacking such empirical agreement, it is not so easy to argue that Allport's traits constitute these foci in any existential sense, useful as their postulation may be in throwing light on individuals.

The argument for functional autonomy of motives, which is the foundation stone ("a declaration of independence") of the structure, is ingenious and hard-hitting. But it seems to this reviewer to suffer from inadequate appreciation of the unceasing dependence of motives upon renewed environmental stimulation. Allport very properly loosens motives from their ancient moorings, but the relative stability of personality which he emphasizes can scarcely be accounted for in terms of permanent rebellion. Not autonomy, nor independence, but a dynamic interdependence with environment, provides such stability.

The individuality of this book is unmistakable. It has borrowed from many sources, but the bonds have pretty much been broken. Its dominant trait is the notion of traits. If this trait has developed a little too much functional autonomy, let it be remembered that every great system of thought has developed as a rebellion against some previous inadequate system.

THEODORE NEWCOMB,
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PSYCHOLOGY OF PERSONALITY. By Ross Stagner. New York: McGraw Hill & Company. 1937. Pp. 465.

Although given a more specialized title, this book is primarily a social psychology written by a psychologist whose thesis is that the structure of each individual personality is the result to perhaps an equal degree of (1) the cultural determinants in the form of fixed patterns of behavior and thinking, introjected values and goals, and (2) the individual determinants of personality: accidents of heredity, physical health and condition, and the miscellaneous influences of a non-cultural sort which are bound to act upon every personality. After completing this rather academic task, the author, possibly nauseated by the character of the social forces he has observed operating in America, turns his attention to methods of reforming the social system. This he holds also to be the task of the psychologist.

Mr. Stagner would be approved by Stuart Chase. He has defined his terms and has likewise refrained from coining strange new words that even with defining become for the reader nothing more than sub-vocal nonsense syllables.

Personality is a quality or attribute of behavior, *i.e.*, there is no "personality" hidden away inside the body which determines its reactions. Observationally, we have only responses of human beings on which to base our statements. But, because these responses have certain common qualities known by popular terms, such as aggressiveness, nervousness, timidity, etc., qualities which identify one person as a unique phenomenon, we can speak of human behavior as showing the characteristics of personality. Personality is neither physical nor biological in nature; it is an abstractable quality of human behavior, as pressure and speed are abstractable qualities of physical events.

The identifying aspects of personality center around the words "adaptive" and "non-adaptive," "adjustive" and "non-adjustive" behavior. By adaptive behavior is meant that which is biologically precisely suited to the needs of the environmental situation. The unnecessary additions or variations from the pattern of perfect adaptation may be spoken of as non-adaptive behavior. They might also be referred to as expressive movements since they often serve to express one's inner states, feelings, emotions, etc. This one of the first axioms in constructing a science of personality is that personality depends upon individual differences in non-adaptive behavior. The second axiom is that personality is composed of a system of habits. Non-adaptive behavior may be adjustive because of the social environment. This leads to a third axiom: the system of habits (which is personality) is largely made up of non-adaptive ways of adjusting to conflict situations. This leads to the general idea that personality excludes directly adaptive, biologically adequate responses (such as reflexes and the adaptive aspects of habits) and includes differences in the style of manner of making biologically adaptive responses and habits developed as a result of, and of significance for, the social environment.

The book is divided into four main sections. Section One, entitled Introduction, includes the author's point of view and a review of methodologies used in the study of personality. Methodologies include the clinical approach or the study of the personality in disease (we question this delimitating the term clinical to the abnormal); the historical approach or the study of personality in its process of development; and the cultural approach or the study of personality as the embodiment of common social conditions. The author is most interested in a combination of the two latter methods.

Section Two is called the Descriptive Psychology of Personality. The opening chapter of this section propounds the view that we may simplify our study of personality by considering separately the structure or reactive components of personality, the underlying motives and the environmental determinants.

It is suggested that behavior may be simplified to two dimensions, labeled approach-withdrawal and increase-decrease of activity. Further complexity depends on the stimulus and the form of approaching or withdrawing response. This simplification offers a source for much controversy among the systematic psychologists.

The next chapter on the feelings and emotions is also controversional. The theory is proposed that there are four basic feelings: pleasantness, unpleasantness, excitement, and depression. Pleasantness and unpleasantness may be qualitatively as well as quantitatively different.

Feelings become attached by a process of learning to a wide variety of situations and these habitual affective responses show wide variations from individual to individual.

Emotions are learned and specific. Emotions imply a particular organism-object relationship whereas feelings are quite general in their

nature. No great distinction is to be made between feelings and emotions. Emotions are based upon feelings, and any emotional process could be analyzed into its component affective and cognitive elements. The author says that he does not believe this is in all cases a fruitful form of activity, despite the evidence of several fat volumes on the subject.

The several chapters on learning are interesting, combining the point of view and the subject matter of the psychologist and the psychiatrist but taking the mystery story element out of the latter.

The chapter on "Implicit Traits of Personality" gives the author's rather unique concept of a "trait," which in the reviewer's judgment has merit. Since it is obvious that the personality is always in an environment, our judgments of the consistency of the individual's behavior will be influenced by whether or not he acts consistently in similar environments. The truth of the matter seems to be that the unity of traits (to the extent that unity exists) depends upon a certain subjective or implicit orientation. Thus the term "trait" may be defined as a form of mental set, a tendency to respond in a manner which is subjectively consistent.

Other chapters in this section are entitled Character, Attitudes and Values, Overt Levels of Personality Structure and Type Theories of Personality.

Section Three stresses the Dynamics of Personality and Section Four, the Determinants of Personality, which are the stimuli offered by the environment.

Dr. A. H. Maslow has contributed Chapter Twenty-two, Personality and Patterns of Culture. The cultural anthropologist's contribution to the social psychologist is one of both point of view and content. The anthropologist can teach us many things, but one lesson we must learn from him is that any single human being, particularly any adult, is inextricably imbedded in a social matrix from which it is impossible to free him completely. We must understand further that our own cultural matrix is only one of many.

Dr. Stagner has stated in his preface that he planned to write a book which would offer an approach to the scientific study of personality, which would legitimize the techinques which had been found successful in dealing with personalities, by showing that the development of personality occurs in such a way that these methods may be expected to succeed. He had hoped that the book would be useful to students with a general course in psychology and laymen with some ground work in the biological and social sciences. His colleagues who read the manuscript were of the opinion that the material was more suitable for a more advanced course. We agree with his colleagues and are glad that he has written a volume which has plenty of material in it into which graduate students can put their teeth. To this reviewer's way of thinking, there is much more need for profound than for light thinking and writing on the subject, variously defined as Personality.

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BEHAVIOR AND BACKGROUND OF STUDENTS IN COLLEGE AND SECONDARY SCHOOL. By Ruth Strang. New York: Harper and Brothers, 1937. Pp. xiv + 515. $4.00.

COUNSELLING TECHNIQUES IN COLLEGE AND SECONDARY SCHOOL. By Ruth Strang. New York: Harper and Brothers, 1937. Pp. x + 159. $2.00.

These two books are the second and third volumes of a five-volume series summarizing "personnel work in educational institutions." They are "concerned primarily with one of the two major tasks of personnel work, namely, the appraisal of an individual's potentialities," but since "the two processes of appraisal (the processes of studying the individual) and adjustment (the processes of providing optimal environment) are separate only in theory," the volumes deal to some extent with "adjustment to individual needs and capacities." The larger book summarizes relevant research on: problems of adjustment; intelligence; scholastic achievement; personality; attitudes and interests; socio-economic data; "adolescents' use of time"; and financial problems. The smaller book describes and evaluates: personnel records; case studies; interviews; observation methods; rating scales; and autobiographical methods. These topics are treated as specific counselling or student personnel technics.

"At present, personnel researches are hidden away in technical journals, bulletins and books not easily accessible to those who are doing personnel work in high schools and colleges. . . . Accordingly, it is desirable that someone do this library work for the personnel worker, and present to him a bibliography from which he can select the articles most closely related to his immediate problems. . . ." In the space of a short review, the foregoing description must serve as the frame of reference for an evaluation of Dr. Strang's books. One other dimension should be added to this frame: "Research must be brought to bear upon problems of student personnel work. . . . It is because human intuition and common sense are not infallible that a knowledge of the results of investigations in the field of individual development and guidance is needed."

In a field so rapidly being explicated and ex-

panded that the past treads upon the heels of the present, Miss Strang has undertaken a much-needed task of synthesis and collation. Her efforts have yielded an indispensable and exhaustive bibliography, logically grouped and clearly annotated in relation to student personnel functions and problems. Beyond this, the sheer magnitude and range of her treatment should strike necessary awe to the heart of the casual dilettante who approaches student personnel work with a cursory and "common-sense" viewpoint; it may even give pause to those administrators who tend to underestimate the specialized nature of the work in selecting staff members to be responsible for personnel programs.

Aldous Huxley refers to *Das Kapital* as Marx' "celebrated and almost universally unread work." It would be distinctly unfortunate if some future historian of student personnel work could apply such apt phrasing to Miss Strang's five-volume series. But there is danger of this eventuality, since Miss Strang has not written for easy or rapid reading, or for those whose basic grasp of certain aspects of theoretical psychology is weak. Her work presupposes a mastery of experimental methods in studying human behavior, skill in statistical interpretation, and a knowledge of psychological theory of human functioning. These are definitely not books for beginners; it might be parenthetically noted that the beginner's book in this field is not yet written. The complexity and amount of the material, and the attendant complexity of treatment, are at once a source of both strength and weakness. The inclusion of so much material lends strength insofar as the books are definitive and inclusive; the weakness springs from a relative lack of opportunity for sufficiently critical analysis of a small, but still representative, sampling of the literature. Dr. Strang has included a section on needed research in each chapter, which, by inference at least, points up the inadequacies of existing research. But by the time this section is reached, the reader is enmeshed in an apparently endless bibliographical net. The correction is obvious: the reader will find the books of greatest value as source material for carefully delimited aspects of the field. A possible end result is equally obvious: the specialists will find the books most valuable; the non-specialists, a too ubiquitous majority, will not tend to use the books to fullest advantage. In the latter case, the need is greater and the capacity less.

In her treatment of technics, again, Dr. Strang tends to emphasize equally each technic discussed, with too little discussion of relative merit or worth. Granting that all possible technics are of some value, it is still not inconsistent to expect a more critical evaluation of relative utility. To offset this impartiality, however, the reviewer finds her treatment of personality and of attitudes and interests to be infused with a caution that is at least theoretically defensible, in the present state of psychological knowledge; but this caution is somewhat extreme in clinical practice. In these chapters, also, the analysis of the literature emphasizes to a lesser extent the contribution of measurement or test methods to the study of the behavior in question.

With proper discounting for the bias of the reviewer, it is disappointing to find so little discussion of the place of tests and psychometric procedures in Dr. Strang's books. For example, in otherwise excellent discussions of the technics of the interview and the case study, tests are mentioned in passing reference. Yet the interpretation of test data with and for a given individual is in itself one of the most complex phases of personnel work.

Knowing that these books are units in a larger series, one can make no identification of omissions until the series is complete. It is safe to assume, however, that few if any serious omissions will be discovered when Dr. Strang finishes her work.

Here, in conclusion, are two books that bring order out of a welter of material in a field of increasing scope. They should be compulsory reading for anyone who considers himself a personnel worker; without grasping Dr. Strang's ideas and without a minimum familiarity with the literature she has summarized, one lacks basic training in the field. The reviewer may not agree completely with her emphases, or with her organization of the material, or with her seemingly limited discussion of the use of tests; these points, however, are also honest differences among workers in the field. They are furthermore overshadowed and dwarfed by the reviewer's appreciation for Dr. Strang's extensive contribution as embodied in this series.

JOHN G. DARLEY
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The American Association for Applied Psychology is an organization devoted to the advancement of psychology as a profession. It is concerned with establishing and maintaining professional standards of training and practice for psychologists in business, education, industry, law, medicine, mental hygiene, social welfare, and vocational guidance. It encourages research in the application of psychology, and endeavors to facilitate cooperative relationships with other professional groups.

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Annual Meeting, Harrisburg, Pa., Saturday, April 19, 1952

The Association's meeting in this issue is grateful to the Journal to all associated groups at the Annual Convention.